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EXAMINER	
LUND, JEFFRIE ROBERT	
ART UNIT	**PAPER NUMBER**
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,457	PUECH, MICHEL	
	Examiner	Art Unit	
	Jeffrie R. Lund	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,15,16 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,15,16 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on October 5, 2007. These drawings are approved by the Examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "suitable" in claim 9 is indefinite in that it does not clearly claim if the heater is connected to an external electrical source or if it is merely capable of being connected to an electrical source.

Claim 10 recites the limitation "thermocoaxial type." Without further explanation in the Specification, it is unclear what the limitation is describing. For the purpose of examination, this limitation is assumed to be describing a coaxial cable shaped heating element.

Regarding claims 11, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 6, 9, 12, 15, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1).

Bosch teaches a plasma processing apparatus comprising:

i. A reaction chamber (2) surrounded by a leakproof wall (outer perimeter of chamber), containing substrate support (8), and communicating with a plasma source (18), is characterized in that it further comprises a heater liner (20) lining all or part of the leakproof wall (outer perimeter of chamber) of the reaction chamber (2) in non-leakproof manner, and an intermediate thermal insulation space (area between 26 and wall) provided between the heater liner (20) and the leakproof wall (outer perimeter of chamber) of the reaction chamber (2) (See Fig. 6, Col. 10, lines 1-65).

ii. The intermediate space between the heater liner (20) and the leakproof wall (outer perimeter of 2) of the reaction chamber (2) communicate with the central space of the reaction chamber (2) via an annular space (area between 26 and 2) of small thickness (See Fig. 6) – **claim 6**.

iii. The heater liner (20) is thermally coupled to a heater (28) such as electrical resistances (Col. 10, line 57) suitable for connection to an external source of electrical energy (Fig. 6, Col. 10, lines 24-58).

iv. Downstream (see above drawing objection) from the substrate support (8) the reaction chamber (2) is limited by a conductive grid (screen, 22) in thermal contact with the heater liner (20) (Fig. 6, Col. 10, 24-65) – **claim 15**.

v. The substrate support (8) comprise electrostatic electrodes (electrostatic chuck) for attracting the substrate (6) (Col. 10, lines 6-10) – **claim 16**.

Bosch does not teach:

i. A liner made of metal or alloy – **in claim 1.**

ii. A reactor according to claim 1, characterized in that the metal or alloy is selected from metals and alloys that firstly do not react with the fluorine-containing etching gas or the passivation gas to form volatile compounds, and secondly do not emit contaminating atoms under the effect of plasma bombardment – **as claimed in claim 2**.

iii. A reactor according to claim 2, characterized in that the appropriate metal is aluminum or titanium – **as claimed in claim 3**.

iv. A reactor according to claim 1, characterized in that the heater liner is associated with temperature-regulator means for regulating its temperature in a suitable range of temperature values – **as claimed in claim 12**.

Wang teaches a plasma processing apparatus comprising:

i. A chamber liner (shields, 150) made of aluminum, titanium, stainless steel, or aluminum oxide (Figs. 1a, 1b, Para. 24) – **in claims 1, 2, and 3.**

ii. A process monitoring system (not shown, including a temperature sensing device, Para. 53-54) used to detect and monitor process conditions continuously

during an operation of the processing chamber, along with a controller (480) to control operation of the chamber by transmitting and receiving electrical signals to and from the various chamber components and systems. The controller (480) then could function as temperature-regulator means for regulating the liner's (150) temperature (See Fig. 1a, Para. 53 and 54).

Support for the "temperature-regulator means" limitation of claim 12 is found in lines 17-18, page 11. Specifically, the specification teaches "temperature regulator means comprising a control device 19 which receives information concerning the temperature of the heater liner 14 as picked up by a temperature sensor 18." Wang teaches a process monitoring system (not shown, Para. 53-54) comprising one or more detectors (not shown, Para. 53-54) such as a temperature sensing device (not shown, Para. 53-54), and a controller (480, Fig. 1a, Para. 54) controls operation of the chamber by transmitting and receiving electrical signals to and from the various chamber components and systems. As such, Wang teaches an equivalent apparatus that performs the function of "a control device which receives information concerning the temperature of the heater liner as picked up by a temperature sensor." As a result, Wang's prior art elements of a temperature sensing device and a controller for monitoring and controlling components of the apparatus perform the identical function of a control device which receives information concerning the temperature of the heater liner as picked up by a temperature sensor in substantially the same way, and produces substantially the same results as the corresponding elements

disclosed in the specification (MPEP 2183) – **claim 12**.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Wang's controller and temperature sensing device, and to make the liner of Bosch out of aluminum or titanium as taught by Wang.

The motivation to add Wang's controller and temperature sensing device to the apparatus of Bosch is to automate process monitoring and control resulting in less downtime or faster production, which is a benefit in the highly competitive electronic industry as taught by Wang (Para. 3, 53, 54). Further, it has been held that automation is obvious. (In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958); MPEP 2144.04)

The motivation for making the shield of Bosch out of aluminum or titanium as taught by Wang is to provide a material that is less brittle and non-ductile as taught by Wang (Para. 46), and to provide an alternate material of construction from which to make the shield of Bosch. Furthermore, it has been held that: the selection of a known material based on its suitability for its intended use is prima facie obviousness (*Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945)); and reading a list and selecting a known compound to meet known requirements is no more ingenious that selecting the last piece to put in the last opening in a jig-saw puzzle (325 U.S. at 335, 65 USPQ at 301).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) as applied to claims 1-3, 6, 9, 12, 15, 16 and 19 above, and further in view of Inazawa et al (US 5595627),

Miller (US 4439463) and Frankel et al. (US 6019848).

Wang further teaches:

i. Bias means (240) for biasing the substrate support (160) in order to control bombardment by particles coming from the plasma (Para. 51) – **in Claim 4**.

Support for the "bias means" limitation of claim 4 is found in lines 24-29, page 9. Specifically, the specification teaches, "substrate support means 3 are biased by an RF generator 11." Wang teaches an electrode power supply (240) for proving an RF bias voltage is connected to the substrate support (160). As such, Wang teaches an equivalent apparatus that performs the function of biasing the substrate support. As a result, Wang's prior art element of electrode power supply for biasing the substrate support perform the identical function of biasing the substrate support means in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).

Bosch and Wang do not teach:

i. A reactor according to claim 1, characterized in that it further comprises: an etching gas source, and means for controlling the etching flow rate to govern the introduction of etching gas into the plasma source; a passivation gas source, and means for controlling the passivation flow rate for governing the introduction of passivation gas into the plasma source; and a control device adapted to cause the etching gas flow rate control means and the passivation gas flow rate control means to operate in alternation – **in claim 4**.

Inazawa teaches a plasma etching apparatus comprising:

i. An etching gas source (70), and a mass flow controller (64) and valve (58) for controlling the etching flow rate to govern the introduction of etching gas into the plasma source; a passivation gas source (68), and a mass flow controller (62) and valve (56) for controlling the passivation flow rate for governing the introduction of passivation gas into the plasma source; and a control device (78) adapted to control the flow rates of the etching gas and the passivation gas (See Fig. 1, Col. 5, lines 1-13) – **in claim 4**.

Miller teaches a plasma processing apparatus comprising:

i. A solenoid valve (98) for controlling gas flow rate into the reactor (18) (See Fig. 3, Col. 6, lines 61-68) – **in claim 4**.

Support for the "means for controlling" limitation of claim 4 is found in lines 11-16, page 9. Specifically, the specification teaches, "etching gas and etching flow rate control means 9b such as a solenoid valve" and "means 9b for controlling passivation flow rate, e.g. a solenoid valve." Miller teaches a solenoid valve as part of a flow control system. As such, Miller teaches an equivalent apparatus that performs the function of controlling gas flow rate. As a result, Miller's prior art element of solenoid valve for controlling gas flow rate perform the identical function of controlling gas flow rate in substantially the same way, and produces substantially the same results as the corresponding elements disclosed in the specification (MPEP 2183).

Frankel teaches a plasma processing apparatus comprising:

i. A control device (processor, 50) adapted to select one of two sources (43, 47) of gases to be sent to the processing chamber (15) in alternation (See Fig. 1A-1E, Col 13, lines 18-27) – **in claim 4**

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add Wang's bias means to Bosch's substrate support means, and to add Inazawa's gas sources and control to Bosch's apparatus.

Motivation to add Wang's bias means to Bosch's substrate support means is to allow etching of the substrate by energizing and accelerating the plasma ions toward the substrate as taught by Wang (Para. 51).

Motivation to add Inazawa's gas sources and control is the ability to produce higher quality FETs as taught by Inazawa (Col. 1, lines 31-36).

It would also have been obvious to one of ordinary skill in the art at the time the invention was made to replace Inazawa's valve with Miller's solenoid valve, and add Frankel's control device programming to Inazawa's control device.

Motivation to replace Inazawa's valve with Miller's solenoid valve is to permit gaseous material to pass into the first chamber at a controlled rate as taught by Miller (Col. 7, line 31-33).

Motivation to add Frankel's control device programming to Inazawa's control device is to allow multiple process steps to be performed in situ in the same chamber to reduce total processing time as taught by Frankel (in Abstract).

7. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) as applied

to claims 1-3, 6, 9, 12, 15, 16 and 19 above, and further in view of Zhao et al. (US 5885356).

Bosch and Wang do not teach:

i. A reactor according to claim 1, characterized in that the heater liner is fastened to the leakproof wall of the reaction chamber by a small number of fastening points **– as claimed in claim 5.**

ii. A reactor according to claim 5, characterized in that the fastening points are of thermally insulating structure opposing the transfer of heat energy by conduction from the heater liner to the leakproof wall of the reaction chamber – **as claimed in claim 7**.

Zhao teaches a substrate processing apparatus comprising:

i. A liner (44) is fastened to the leakproof wall (230) of a chamber (239) by a small number of fastening points (screw, 41) (Figs. 4 and 5, Col. 7, lines 28-31) – **in claim 5.**

ii. The fastening points (screw, 41) are of thermally insulating structure (TEFLON) (Col. 7, lines 15-31) – **in claim 7.**

Therefor it would have been obvious to one of ordinary skill in the art at the time the invention was made to attaché the liner of Bosch and Wang with TEFLON™ screws as taught by Zhao.

The motivation for attaching the liner Bosch and Wang with TEFLON™ screws of add Zhao's TEFLON screws as fastening points to Bosch's apparatus is to provide a mans of attaching the liner of Bosch and Wang. Furthermore, TEFLON™ is thermally

and electrically insulating and is less susceptible to particulate formation as taught by Zhao (Col.3, lines 51-57)

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) and Zhao et al. (US 5885356) as applied to claims 1-3, 5, 6, 9, 12, 15, 16 and 19 above, and further in view of Freiberger et al. (US 3880396).

Bosch further teaches that the liner (20) can be supported in any suitable way (Col. 10, lines 28-29).

Bosch, Wang and Zhao do not teach:

i. A reactor according to claim 5, characterized in that the heater liner (14) is suspended from the leakproof wall (2) of the reaction chamber (1) by three projections having heads, projecting beneath the face of the leakproof wall (2) and engaged in keyhole-shaped slots each having a wide portion and for passing a head and a narrow portion for retaining the head – **as claimed in claim 8.**

Freiberger teaches a quick change panel fastening system comprising:

i. Projections (23) having heads (23b), projecting beneath the face of the base structure (11) and engaged in keyhole-shaped slots (60) in a panel (10), each slot having a wide portion (60a) and for passing a head (23b) and a narrow portion (60b) for retaining the head (23b) (See Figs. 1, 4, 5; Col. 1, line 66 thru Col. 2, line 20; and Col. 3, line 53 thru Col. 4, line 21) – **in claim 8**.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to fasten the liner of Bosch, Wang, and Zhao with the keyholes

fastening components as taught by Freiberger.

The motivation for using Freiberger's keyhole fastening components to secure the liner of Bosch, Wang, and Zhao is to provide a simplified structure for quickly and easily mounting a panel on a base as taught by Freiberger (Col. 1, lines 18-20). Further, it is well established that the duplication of parts is obvious (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

9. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) as applied to claims 1-3, 6, 9, 12, 15, 16 and 19 above, and further in view of Zhao et al. (US 5968379).

Bosch and Wang do not teach:

i. The electrical resistances comprise thin-film electrical resistances and/or electrical resistances of the thermnocoaxial type – **claim 10**.

ii. A reactor according to claim 1, characterized in that the heater liner includes heater (see above) suitable for heating it to a temperature higher than 150 degree C – **as claimed in claim 13**.

Zhao teaches a wafer processing apparatus comprising:

i. A heating element (107) of electrical resistances comprises thin-film (flat ribbon) electrical resistances capable of heating to 400 degree C (See Fig. 7C, Col. 7, lines 19-21; Col. 18, lines 49-55; Col. 20, lines 25-41) - **claims 10 and 13**.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Bosch's heater with Zhao's flat ribbon heating

element.

The motivation to replace Bosch's heater with Zhao's flat ribbon heating element is that Zhao's flat heating element provides a greater ratio of surface area to cross-section area, which transfers heat more effectively as taught by Zhao (Col. 20, lines 52-56).

10. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) as applied to claims 1-3, 6, 9, 12, 15, 16 and 19 above, and further in view of Sopory (US 6492629 B1)

Bosch and Wang do not teach:

i. The electrical resistances comprise thin-film electrical resistances and/or electrical resistances of the thermnocoaxial type – **claim 10**.

ii. A reactor according to claim 1, characterized in that the heater liner includes a heater suitable for heating it to a temperature higher than 150 degrees C – **as claimed in claim 13**.

Sopory teaches an electrical heating device comprising:

i. A flexible coaxial heater cable (100) that can maintain a temperature range of 500-600 degrees F(Fig. 6, Col. 7, line 18 to 38; Col. 10, lines 44-47) – **claims 10 and 13**.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Bosch's heater with Sopory's coaxial heater cable.

The motivation to replace Bosch's heater with Sopory's coaxial heater cable is

that Sopory's coaxial heater cable responds very rapidly to achieve an equilibrium state as taught by Sopory (Col. 7, lines 27-29).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bosch et al. (US 6506254 B1) in view of Wang et al. (US 2003/0188685 A1) as applied to claims 1-3, 6, 9, 12, 15, 16 and 19 above, and further in view of Collins et al. (US 6063233).

Bosch further teaches:

i. The heater liner (20) is heated by a radiant (Col. 10, lines 38-40) heater (see above) – **in claim 11**.

Bosch and Wang do not teach:

i. A reactor according to claim 1, characterized in that the heater liner is heated by radiant heater means such as infrared elements – **as claimed in claim 11**.

Collins teaches a plasma processing apparatus comprising:

i. Radiant heater means (see above) such as infrared elements (tungsten/halogen lamps, 72) (Fig. 4A, Col. 18, lines 17-35) – **in claim 11**.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the generic radiant heating means of Bosch with the lamps of Collins.

The motivation for replacing the radiant heating means of Bosch with the lamps of Collins is because this type of radiant heater has minimal thermal lag, that is, response time to temperature setting change is very short (less than one second) as taught by Collins (Col. 18, lines 17-35).

Response to Arguments

12. Applicant's arguments filed October 5, 2007 have been fully considered but they are not persuasive.

In regard to the argument:

> If one of skill in the art were to consider Bosch and Wang et al, one might consider following the teaching of Wang et al to provide an aluminum, titanium, stainless steel or aluminum oxide liner element. But the artisan would not proceed with such a modification because the materials of the Wang et al liner are fine for deposition chambers but are inappropriate for an etching reactor. Thus, the combination proposed by the examiner would not have been made.

The Examiner disagrees. Bosch is not limited to etching only and can be used as a coating chamber (column 4 lines 50-65). Wang et al can be used as an etching chamber (paragraph 0055). Furthermore, contrary to Applicant's statement, semiconductor processing apparatus are commonly used to both coat and etch (i.e. to remove a native oxide layer prior to depositing a layer, or to clean the chamber after a deposition process). Also, the processing apparatus share common problems such as gas flow or particle control, and a solution in one type of processor is readily transferable to the other type. Thus one of ordinary skill in the art seeing that Wang et al teaches the use of metallic liners (aluminum and titanium) would be motivated to also make the liners of Bosch out of a metallic material (aluminum or titanium).

In regard to the argument:

> Further, Bosch et al. dissuade one from using a metal for the liner, Bosch teaching that it would be undesirable to have any aluminum in the liner because it can be destroyed by the etching beam and produce a contamination of the substrate (lines 47-49 of column 10). This phenomena cannot occur in a deposition chamber, thus aluminum may be used. But one reading the two references and seeing that Bosch is an etching reactor and seeing that Bosch explicitly states that one should not use aluminum, would clearly not use the Wang et al liner material in the Bosch device.

The Examiner disagrees for the following reasons.

a. The Applicant has misstated the teaching of Bosch. In column 10 lines 41-58 Bosch teaches:

> The plasma chamber liner 20 can comprise a one-piece liner or multi-piece liner such as interlocking ceramic tiles. To provide an electrical ground path for the plasma, the tiles are preferably of an electrically conductive material such as silicon and carbon. For example, the tiles can be entirely of CVD SiC or Si impregnated SiC coated with CVD SiC. Such a material provides an added benefit in that it does not contain aluminum and thus reduces Al contamination of processed substrates. The SiC tiles can be bonded to an aluminum backing plate using an electrically conductive elastomer which can absorb lateral stresses caused by different thermal expansion coefficients of the SiC and Al. Each tile and backing plate assembly can be attached directly or indirectly to the chamber wall. For example, the tiles can be supported by a support frame which includes an inner frame and an outer frame. Temperature control of the liner can be achieved by a heater supplied power by electrical leads and a temperature controlled member. (Emphasis added)

From this passage it is clear that Bosch teaches that removing Al from inner piece of a liner will result in less aluminum contamination, and that the liner can have a second outer part that is made of aluminum. Nowhere does Bosch teach that teaching that "it would be undesirable to have any aluminum in the liner because it can be destroyed by the etching beam and produce a contamination of the substrate". At best, Bosch teaches that removing aluminum from the inner surface reduces aluminum contamination. Furthermore, Bosch also teaches that the liner can include aluminum parts. Thus, Bosch does not teach away from the use of aluminum in the liner.

The Examiner further notes that the claims are not limited to the use of aluminum, Bosch is silent regarding the use of titanium and stainless steel.

b. The statement that "This phenomena cannot occur in a deposition chamber, thus aluminum may be used" is not correct. Any plasma apparatus is susceptible to ion bombardment or sputter etching caused by ion bombardment. Thus, the plasma CVD apparatus of Wang et al is also susceptible to aluminum contamination. Furthermore, non-plasma systems are also susceptible to aluminum contamination caused by rubbing and flaking of material off of aluminum parts. Thus, one of ordinary skill in the art would know of the problem with aluminum and use it because aluminum contamination is not a concern or it is within acceptable limits, or use another material such as SiC as taught by Bosch or titanium or stainless steel as taught by Wang et al.

The Examiner further notes that carbon contamination can also be a problem. If carbon contamination is a concern, one of ordinary skill in the art would be strongly motivated to replace the carbon containing liner of Bosch with the non-carbon containing liner of Wang et al.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (10:00 am - 9:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeffrie R. Lund
Primary Examiner
Art Unit 1792

JRL
12/18/07